

## TECHNICAL MEMORANDUM

**To:** Steve Faryan, Kevin Turner

**From:** Jeff Pope

**CC:** Chris Cahnovsky, Gina Search, Jim Moore, Paula Stine, Dave Webb, Tom Binz, Robert Egan, Robert Howe, Hartford Working Group

**Subject:** **Addition of Shallow Extractions Wells to Vapor Control System Village of Hartford, Illinois**

**Date:** February 22, 2005

### Introduction

Results from the recent SVE pilot test conducted at the Hartford Community Center indicate that the North Olive stratum can be influenced through the use of vapor extraction. The SVE pilot test results will be submitted in a technical memorandum by March 31, 2005. The Hartford Working Group proposes to install shallow vapor extraction wells next to the newly installed HSVE wells to provide the flexibility to operate the Vapor Control System (VCS) in the shallow North Olive Stratum or in areas where the North Olive is absent at shallow depths to minimize residential vapor intrusion.

### Design Details

We propose to install the shallow wells in a similar manner to those installed as part of the ongoing VCS upgrade. Currently, the upgraded system has combination shallow and deep wells at HSVE-1 (south of E. Birch Street), HSVE-6 (on W. Date Street) and HSVE-8 (on E. Date Street). We propose that additional shallow wells be installed at the other 12 locations (HSVE-2 through 5, HSVE-7, HSVE-9 through 12, and HSVE-17 through 19 (see Figure 1). Note that HSVE-13 through 16 are SVE wells that were installed in the sanitary sewer trench backfill along East Watkins Street. As can be seen on Figure 1, the North Olive Stratum is not present at HSVE-12, 17, or 18. At HSVE-12, the North Olive is present approximately 100 feet to the east. Therefore, at this location, the shallow SVE well (HSVE-12S) will be located approximately 120 feet east of HSVE-12.

Figure 2 illustrates the installation details for these additional shallow wells. The wells will be screened in the North Olive Stratum at each location, where present. Based on the

currently available geologic information in our possession relating to the North Olive Stratum, the new shallow HSVE wells will be screened from approximately 7 to 12 feet below ground surface. At locations where the North Olive is absent (HSVE-17 and 18), the new shallow SVE wells will also be screened from approximately 7 to 12 feet below ground surface. Tie-ins will be accomplished by installing a tee to the existing connection between the deep HSVE and the VCS piping (see Figure 2). Each new shallow well will be fitted with a control valve and vacuum gauge within a flush-mounted, concrete vault.

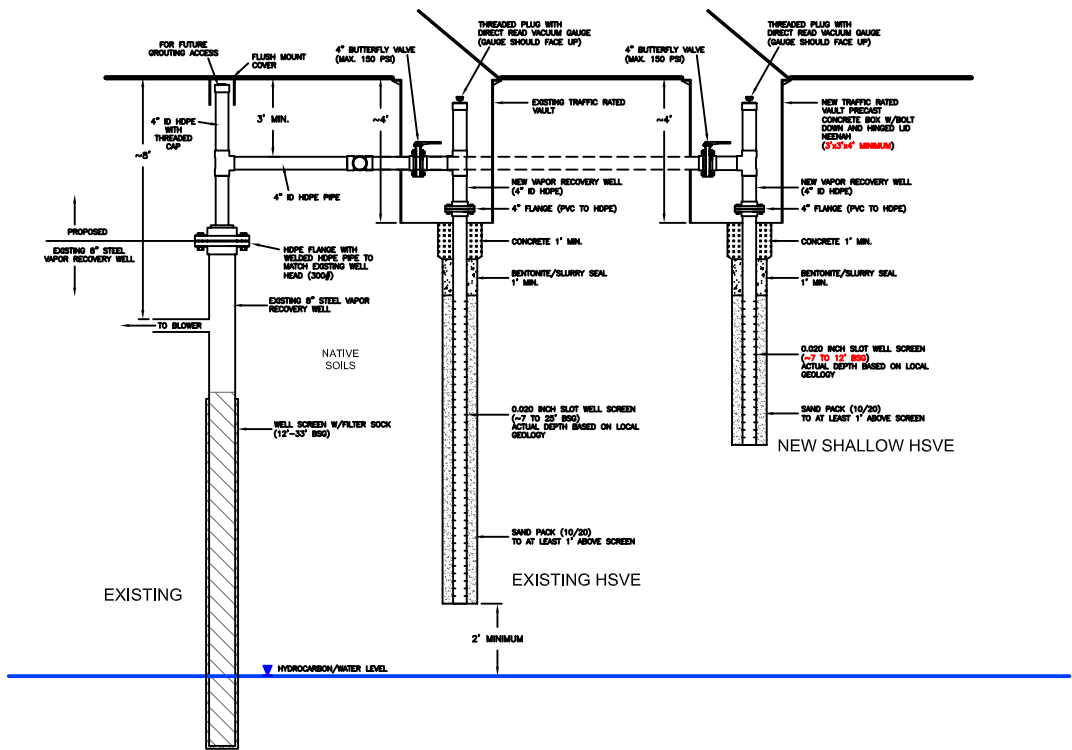
### **Operational Strategy**

Once the new shallow wells are connected to the system, they will be brought online to begin extracting from the North Olive stratum or shallow zones where the North Olive is absent. Due to the new system's design airflow capacity (i.e., 2,250 cubic feet per minute) the flow from the deeper wells will likely need to be reduced to provide the required airflow from the North Olive stratum.

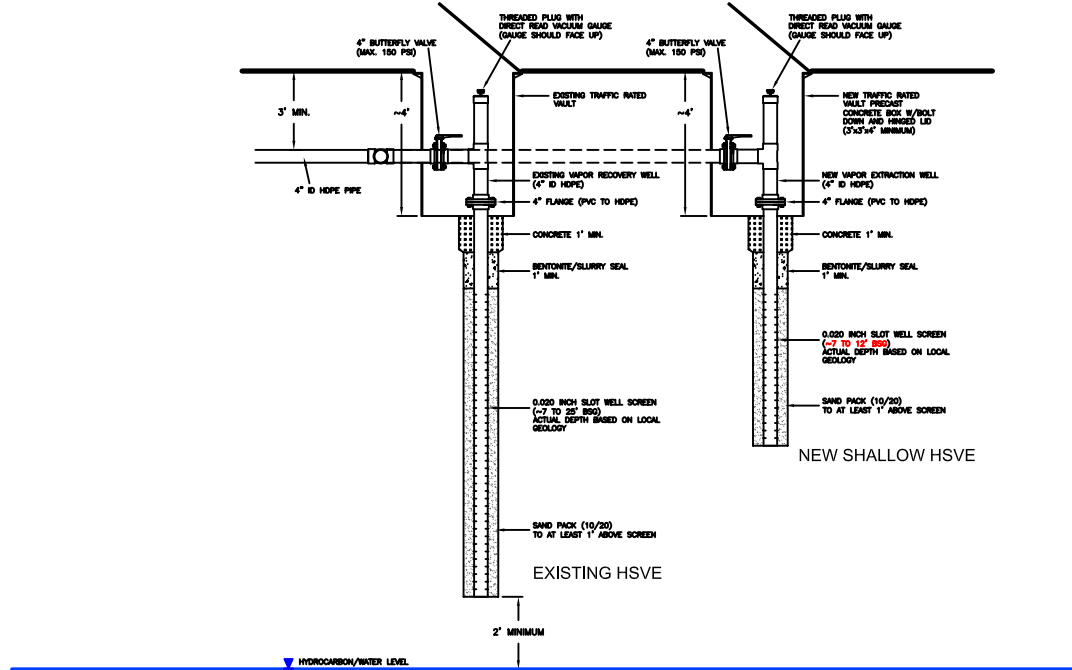
As part of the continuing startup and pilot testing of the upgraded VCS, vacuum and pressure data from the North Olive and Main Sand will be evaluated to determine the optimal balance for shallow and deep vapor extraction.

### **Implementation Schedule**

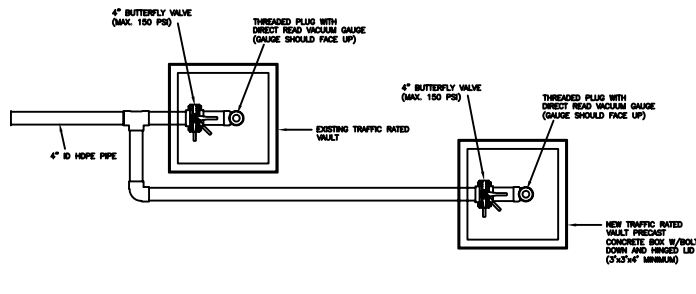
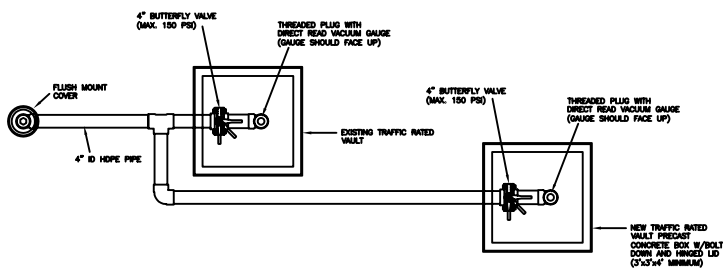
It is anticipated that installation of the additional shallow vapor extraction wells can be accomplished within 2 to 4 months of this submission, pending no unforeseen complications of the start-up of the VCS and following approval by the USEPA.




TYPICAL ADDITION OF SHALLOW VAPOR EXTRACTION WELLS TO EXISTING HSVE WELLS

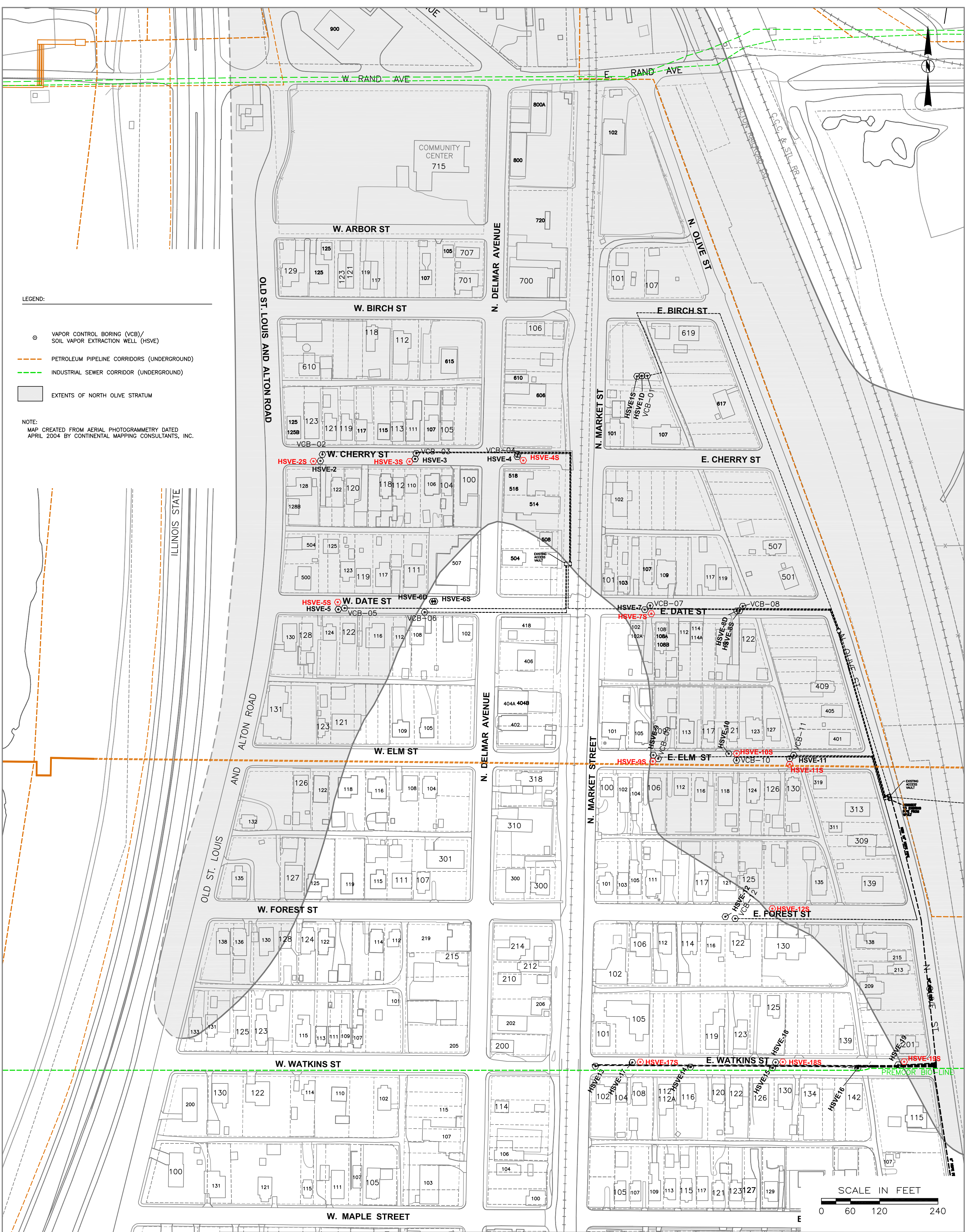


TYPICAL WATKINS STREET VAPOR CONTROL WELL CONNECTION



ENGINEERS' SEAL	NO.	DATE	BY	REVISIONS	DESIGN BY: JLP		SHALLOW VAPOR EXTRACTION WELL CONSTRUCTION DETAILS  THE HARTFORD WORKING GROUP HARTFORD, ILLINOIS	FIGURE  <b>2</b>
					CHECKED BY: JLP			
					DRAWN BY: BCP			
					DATE: 2-17-05			
					SCALE: AS SHOWN			
					CAD NO.: FIG 2			
					PROJECT NO.: 15-03095.13			





DESIGN BY:	JLP
CHECKED BY:	JLP
DRAWN BY:	BCP
DATE:	2-16-05
SCALE:	AS SHOWN
CAD NO.:	Shallow Wells
PROJECT NO.:	15-03095.13



ADDITIONAL SHALLOW VAPOR EXTRACTION  
WELLS LOCATION MAP

THE HARTFORD AREA HYDROCARBON PLUME SITE  
THE HARTFORD WORKING GROUP  
HARTFORD, ILLINOIS

FIGURE

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